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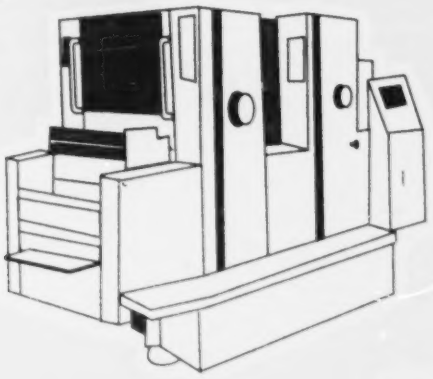
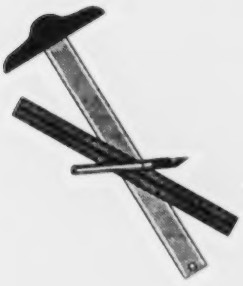
ABSTRACT

This document, which reflects Mississippi's statutory requirement that instructional programs be based on core curricula and performance-based assessment, contains outlines of the instructional units required in local instructional management plans and daily lesson plans for secondary-level courses in graphics and print communications I-II. Presented first are a program description and course outline. Section I contains curriculum frameworks for both courses, and section II contains outlines of the instructional units required in each course. The first course includes units on the following topics: orientation; safety and equipment familiarization; applied math/measurements for graphics and print communications; job planning and layout; introduction to desktop publishing; basic photography and darkroom processes; stripping and platemaking; fundamentals of printing and duplication; operation of offset duplicators/presses; and bindery operations. Topics covered in the units of the second course are the following: orientation review; safety and equipment familiarization review; employability skills, job planning/layout; desktop publishing; darkroom techniques; master and platemaking; offset duplicator/press operations; bindery; and machinery repair and adjustment. Each unit includes suggested time on tasks, competencies and objectives, teaching strategies, assessment strategies, and resources. Recommended tools and equipment are listed in section III. Appended are lists of related academic topics and workplace skills for the 21st century and student competency profiles for both courses. (MN)

ED 397 345

Mississippi Curriculum Framework for Graphics and Print Communications





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1995

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MISSISSIPPI

CURRICULUM FRAMEWORK

FOR

GRAPHICS AND PRINT COMMUNICATIONS

(PROGRAM CIP: 48.0201 - GRAPHIC AND PRINTING EQUIPMENT OPERATORS)

SECONDARY PROGRAMS

1995

August 1, 1995

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FOREWORD

The courses in this document reflect the following statutory requirements as found in Section 37-3-49, Mississippi Code of 1972, as amended:

> The State Department of Education shall provide an instructional program and establish guidelines and procedures for managing such programs in the public schools as part of the State Program of Educational Accountability and Assessment of Performance. . .
>
> The department shall provide that such program or guidelines . . . are enforced through the performance-based accreditation system.
>
> The local school board must adopt the objectives that will form the core curriculum that will be systematically delivered throughout the district.
>
> Standards for student performance must be established for each core objective in the local program and those standards establish the district's definition of mastery for each objective.
>
> There shall be an annual review of student performance in the instructional program against locally established standards.

Each secondary vocational-technical course consists of a series of instructional units which focus on a common theme. All units have been written using a common format which includes the following components:

- Unit Number and Title
- Suggested Time on Task - The number of days of instruction that should be required to teach the competencies and objectives of the unit. For secondary occupational programs, a "day" represents a two-period block of instruction.
- Competencies and Suggested Objectives
  - A **Competency** represents a general concept of performance that students are expected to master as a requirement for satisfactorily completing a unit. Students will be expected to receive instruction on all competencies in the curriculum framework.
  - The **Suggested Objectives** represent the enabling and supporting knowledge and performances that will indicate mastery of the competency.
- Suggested Teaching Strategies - This section of each unit indicates strategies that can be used to enable students to master each suggested objective. Teachers should feel free to modify or enhance these suggestions based on needs of their students and resources available in order to provide optimum learning experiences for their students.

- Suggested Assessment Strategies - This section indicates strategies that can be used to measure student mastery. Examples of suggested strategies could include classroom discussions, laboratory exercises, and student assignments. Again, teachers should feel free to modify or enhance these suggested assessment strategies based on local needs and resources.
- Suggested Resources - This section indicates some of the primary instructional resources that may be used to teach the competencies and suggested objectives. Again, these resources are suggested and the list may be modified or enhanced based on needs and abilities of students and on available resources.

The following guidelines were used in developing the curriculum framework in this document and should be considered in developing local instructional management plans and daily lesson plans:

- The content of the courses in this document reflects approximately 75 percent of the time allocated to each course. For a one-year course, this means that the content of the existing units of instruction should represent approximately 135 days of instruction. The remaining 25 percent of each course should be developed at the local district level and may reflect:
  - Additional units of instruction within the course related to topics not found in the state framework.
  - Activities which develop a higher level of mastery on the existing competencies and suggested objectives.
  - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed/revised.
  - Activities which implement components of the Mississippi Tech Prep Initiative, including integration of academic and vocational-technical skills and coursework, school-to-work transition activities, and articulation of secondary and postsecondary vocational-technical programs.
  - Individualized learning activities, including work site learning activities, to better prepare individuals in the courses for their chosen occupational area.

- Sequencing of the units of instruction within a course is left to the discretion of the local district. Naturally, foundation units related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other units related to specific skill areas in the course, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

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August 1, 1995

PROGRAM DESCRIPTION

GRAPHICS AND PRINT COMMUNICATIONS

(Program CIP: 48.0201 - Graphic and Printing Equipment Operators)

Graphics and Print Communications is a two-year secondary vocational program designed to prepare a student for employment in commercial printing or for further study in the field at the postsecondary level.

The first year Graphics and Print Communications student is taught orientation, safety, basic math and measurements, job planning and layout, desktop publishing, basic photographic process, film developing and darkroom procedures, stripping and platemaking, fundamentals of offset presswork, preparation of offset presses for printing, and bindery operations. Emphasis is on learning and mastering correct techniques.

The second year Graphics and Print Communications student reviews orientation and safety, and receives additional instruction on employability skills, job planning and layout, desktop publishing, darkroom techniques, offset master and platemaking, offset press operation, binding operations, and machine repair and adjustment.

COURSE OUTLINE

GRAPHICS AND PRINT COMMUNICATIONS I

Unit #	Title	No. of Days
Unit 1	Orientation	3
Unit 2	Safety	5
Unit 3	Basic Math and Measurements	5
Unit 4	Job Planning and Layout	5
Unit 5	Introduction to Desktop Publishing	30
Unit 6	Basic Photography and Darkroom Processes	5
Unit 7	Stripping and Platemaking	10
Unit 8	Fundamentals of Offset Presswork	25
Unit 9	Preparation of Offset Presses for Printing	25
Unit 10	Bindery Operations	15

GRAPHICS AND PRINT COMMUNICATIONS II

Unit #	Title	No. of Days
Unit 1	Orientation (Review and Reinforcement)	5
Unit 2	Safety (Review and Reinforcement)	10
Unit 3	Employability Skills	10
Unit 4	Job Planning and Layout	5
Unit 5	Desktop Publishing	40
Unit 6	Darkroom Techniques	5
Unit 7	Offset Master and Platemaking	15
Unit 8	Offset Press Operation	40
Unit 9	Binding Operations	10
Unit 10	Machine Troubleshooting	5

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SECTION I:

CURRICULUM FRAMEWORK

FOR

GRAPHICS AND PRINT COMMUNICATIONS

CURRICULUM FRAMEWORK

Course Name: Graphics and Print Communications I

Course CIP Code: 48.0201

Course Description: Graphics and Print Communications I is the introductory course in the secondary Graphics and Print Communications program. Students enrolled in the course receive an introduction to graphic and printing competencies including safety and equipment familiarization, applied math and measurements concepts, job planning and layout, desktop publishing, stripping and platemaking, printing and duplication, and bindery. (2-2½ Carnegie units, depending upon time spent in the course)

Competencies and Suggested Objectives:

1. Review educational, occupational, and leadership opportunities in graphics and print communications.
   a. Review student rules and regulations for the local school.
   b. Investigate career opportunities in graphics and print communications.
   c. Update the students' career and educational plans.
   d. Identify and describe leadership opportunities available from student youth organizations in the school and community, including VICA.

   Related Academic Topics (See Appendix A):
   C4, C6

   Workplace Skills (See Appendix B):
   WP2, WP3, WP6
2. Demonstrate general safety procedures used in graphics and print communications.
   a. Describe and apply general safety rules associated with graphics and print communications.
   b. Locate and describe the use of fire safety equipment in the graphics and print communications shop.
   c. Describe and apply safety precautions for using flammable liquids in graphics and print communications applications.
   d. Describe procedures to be taken in case of an accident or injury in the graphics and print communications shop.
   e. Describe and apply personal safety protection including eye, ear, hand, and body protective devices.
   f. Describe and apply proper shop dress codes.

Related Academic Topics (See Appendix A):

C1, C4, C6

S8

Workplace Skills (See Appendix B):

WP4, WP5

3. Demonstrate procedures for handling, storing, and disposing of hazardous materials.
   a. Recognize signal words and symbols that indicate severity of a hazard.
   b. Describe methods for reducing hazardous waste.
   c. Describe procedures for storing hazardous waste.
   d. Interpret data found on a hazardous materials safety data sheet (MSD).
   e. Describe general safety procedures to follow for first aid and clean-up in case of an accident involving hazardous materials.
   f. Demonstrate procedures for handling, storing, and disposing of hazardous materials.

   Related Academic Topics (See Appendix A):

   C1, C4, C6

   S5, S8

   Workplace Skills (See Appendix B):

   WP3, WP5

4. Demonstrate familiarity with equipment in the graphics and print communications laboratory and hazards associated with that equipment.
   a. Identify and describe the use of all major pieces of equipment in the graphics and print communications laboratory.
   b. Recognize hazards associated with each piece of equipment.

   Related Academic Topics (See Appendix A):

   C4, C6

   S6, S8

   Workplace Skills (See Appendix B):

   WP5

5. Perform mathematical operations related to graphics and print communications applications.
   a. Calculate the number of factory size sheets that will be needed to print a specific job, using fraction and decimals.
   b. Calculate ratio and proportion problems associated with mixing chemicals, page size, and image size.
   c. Convert page size from inches to picas.

   Related Academic Topics (See Appendix A):

   M1, M4

   Workplace Skills (See Appendix B):

   WP1, WP6

6. Perform measurement practices as applied to graphics and print communications applications.
   a. Measure linear dimensions for printing materials in inches and fractions of inches, and in centimeters.
   b. Measure type in points and picas.
   c. Measure copy for reduction and enlargement using a proportion wheel to determine percentage setting.
   d. Measure liquid volume for mixing chemicals for darkroom and pressroom operations.

   Related Academic Topics (See Appendix A):
   M1, M4

   Workplace Skills (See Appendix B):
   WP1, WP6
7. Perform basic layout procedures.
   a. Identify and describe the use of tools used in layout including the layout table, triangle, line gauges, and pasting equipment.
   b. Position work on a layout table using a T-square.
   c. Design a simple single page layout.

   Related Academic Topics (See Appendix A):
   C4, C6
   M1, M4, M5

   Workplace Skills (See Appendix B):
   WP1, WP6
8. Perform basic computer skills associated with desktop publishing.
   a. Identify the parts of a computer desktop publishing system and describe their functions.
   b. Define terms associated with computer usage including cursor, pointer, document, diskette, hard drive, etc.
   c. "Boot" the computer and bring applications software on-line.
   d. Initialize (format) a diskette.
   e. Identify different types of software used in desktop publishing and describe its uses including word processing software, scanning software, desktop publishing, clip art, and drawing software.

   Related Academic Topics (See Appendix A):
   C4, C6
   S8

   Workplace Skills (See Appendix B):
   WP2, WP5, WP6
9. Perform basic word processing operations.
   a. Create a file, set margins, input text, spell check, edit and proof, save to disk, print, and exit.

Related Academic Topics (See Appendix A):

C4, C6

Workplace Skills (See Appendix B):

WP2, WP5, WP6

10. Perform desktop publishing operations.
    a. Define terms associated with desktop publishing systems and desktop publishing operations.
    b. Describe and use desktop publishing and page layout software features including menus, rulers, scroll bars, clip boards, tool boxes, and graphic interfaces (Windows).
    c. Scan graphics and text to a desktop publishing file.
    d. Select appropriate type style (font) and size for different parts of a layout
    e. Perform desktop publishing operations including creating a page set-up, importing text and graphics, inputting commands for font size, aligning and leading, producing different sizes of lines and rules, inserting black-outs for photograph, saving file to diskette, and printing hard copy.
    f. Correctly exit the desktop publishing software and operating system.

    Related Academic Topics (See Appendix A):

    C4, C6

    Workplace Skills (See Appendix B):

    WP2, WP5, WP6

11. Perform basic set-up and adjustments of a process camera.
    a. Identify and describe the functions of the basic parts of a process camera including copy board, bellows, lens and F-stop, lights, and camera back.
    b. Use a proportional wheel to set up the process camera to make a given size enlargement or reduction.
    c. Select the proper F-stop setting for a given copy.
    d. Select the proper exposure (shutter speed) for a given copy.
    e. Identify and describe the different types of copy that are made on a process film.

    Related Academic Topics (See Appendix A):

    C4, C6
    M1, M4
    S6, S8

    Workplace Skills (See Appendix B):

    WP5, WP6

12. Perform basic darkroom procedures.
    a. Select proper clothing and other protective devices for handling chemicals in the darkroom.
    b. Set up processing trays in proper sequence.
    c. Utilize proper procedures for handling, mixing, and storing chemicals.
    d. Utilize proper procedures for cleaning the darkroom and disposing of used chemicals.

Related Academic Topics (See Appendix A):

C4

M1, M4

S5, S8

Workplace Skills (See Appendix B):

WP5, WP6

13. Produce a process negative.
    a. Describe the types films that are used in process cameras.
    b. Utilize proper procedures for handling and cutting film.
    c. Set up copy and film, adjust camera, and expose film to produce a negative.
    d. Process exposed film including developing, fixing, washing, and drying to produce a negative.

Related Academic Topics (See Appendix A):

C4, C6

S5, S6

Workplace Skills (See Appendix B):

WP5, WP6

14. Perform stripping operations.
    a. Identify and describe the use of tools and equipment used in the stripping process including masking sheets, light table, stripping knife, tape, etc.
    b. Strip a single negative flat.

Related Academic Topics (See Appendix A):

C4, C6

M1, M4

Workplace Skills (See Appendix B):

WP1, WP5, WP6

15. Perform platemaking operations.
    a. Identify and describe the use of tools and equipment used in platemaking.
    b. Identify and describe the use of the different types of plates and platemakers.
    c. Expose a single negative plate.

Related Academic Topics (See Appendix A):

C4, C6

S6

Workplace Skills (See Appendix B):

WP5, WP6

16. Describe the role of copiers in printing and duplication.
    a. Describe the operating principles of a copier.
    b. Describe jobs for which high speed copiers are best suited.

Related Academic Topics (See Appendix A):

C4, C6

S6

Workplace Skills (See Appendix B):

WP4, WP5, WP6

17. Perform set-up of an offset duplicator/press.
    a. Compare an offset duplicator/press to a copier.
    b. Identify and describe the function of the major systems and units of an offset duplicator/press.
    c. Set up basic paper feed and delivery system for a offset duplicator/press including adjusting feeder to paper size, setting up the register board, setting the impression, setting up the receiver tray/chain delivery system, and adjusting air for stock weight.

    Related Academic Topics (See Appendix A):

    C4, C6

    S6

    Workplace Skills (See Appendix B):

    WP2, WP4, WP5

18. Prepare an offset duplicator/press for printing.
    a. Mix fountain solution according to type of plate.
    b. Set fountain solution flow to moisture rollers.
    c. Apply ink on ink fountain roller
    d. Install a master plate to plate cylinder.

    Related Academic Topics (See Appendix A):

    C4

    M1, M4

    S 5

    Workplace Skills (See Appendix B):

    WP1, WP5, WP6

19. Operate an offset duplicator/press.
    a. Run a one page (8 1/2" x 11") job on 20 lb. paper stock.

    Related Academic Topics (See Appendix A):

    C5, C6

    M1, M4

    Workplace Skills (See Appendix B):

    WP3, WP5, WP6

20. Perform bindery operations.
    a. Discuss different types of binding operations and their applications including folding, stitching, spiral, tipping, padding, hot glue, and trimming.
    b. Perform a single-fold.
    c. Collate, drill, and stitch printed materials.

Related Academic Topics (See Appendix A):

C4, C6

M1, M4

Workplace Skills (See Appendix B):

WP3, WP5, WP6

CURRICULUM FRAMEWORK

Course Name: Graphics and Print Communications II

Course CIP Code: 48.0291

Course Description: Graphics and Print Communications II is a continuation of Graphics and Print Communications I. Students enrolled in the course receive advanced instruction in graphic and printing competencies including safety and equipment familiarization, applied math and measurements concepts, job planning and layout, desktop publishing, stripping and platemaking, printing and duplication, and bindery. (2-2½ Carnegie units, depending upon time spent in the course)

Competencies and Suggested Objectives:

1. Review educational, occupational, and leadership opportunities in graphics and print communications.
   a. Review student rules and regulations for the local school.
   b. Investigate career opportunities in graphics and print communications.
   c. Update the students' career and educational plans.
   d. Identify and describe leadership opportunities available from student youth organizations in the school and community, including VICA.

   Related Academic Topics (See Appendix A):
   C4, C6

   Workplace Skills (See Appendix B):
   WP2, WP3, WP6
2. Demonstrate general safety procedures used in graphics and print communications.
   a. Describe and apply general safety rules associated with graphics and print communications.
   b. Locate and describe the use of fire safety equipment in the graphics and print communications shop.
   c. Describe and apply safety precautions for using flammable liquids in graphic and print communications applications.
   d. Describe procedures to be taken in case of an accident or injury in the graphics and print communications shop.
   e. Describe and apply personal safety protection including eye, ear, hand, and body protective devices.
   f. Describe and apply proper shop dress codes.

   Related Academic Topics (See Appendix A):
   C1, C4, C6
   S8

   Workplace Skills (See Appendix B):
   WP4, WP5

3. Demonstrate procedures for handling, storing, and disposing of hazardous materials.
   a. Recognize signal words and symbols that indicate severity of a hazard.
   b. Describe methods for reducing hazardous waste.
   c. Describe procedures for storing hazardous waste.
   d. Interpret data found on a hazardous materials safety data sheet (MSD).
   e. Describe general safety procedures to follow for first aid and clean-up in case of an accident involving hazardous materials.
   f. Demonstrate procedures for handling, storing, and disposing of hazardous materials.

   Related Academic Topics (See Appendix A):
   C1, C4, C6
   S5, S8
   Workplace Skills (See Appendix B):
   WP3, WP5
4. Demonstrate familiarity with equipment in the graphics and print communications laboratory and hazards associated with that equipment.
   a. Identify and describe the use of all major pieces of equipment in the graphics and print communications laboratory.
   b. Recognize hazards associated with each piece of equipment.

   Related Academic Topics (See Appendix A):
   C4, C6
   S6, S8
   Workplace Skills (See Appendix B):
   WP5
5. Develop skills and resources necessary to gain employment.
   a. Develop a personal data sheet (resume).
   b. Develop a cover letter (letter of application).
   c. Practice interview skills.
   d. Complete different types of job application forms.
   e. Develop a portfolio of projects and jobs completed.

   Related Academic Topics (See Appendix A):
   C3, C4, C6
   Workplace Skills (See Appendix B):
   WP3, WP3, WP6
6. Perform job planning and layout tasks.
   a. Describe the different types of layouts and their applications, including thumbnail sketch, rough layout, and comprehensive layout.
   b. Create a 4-page and 8-page dummy imposition.
   c. Create a multiple page comprehensive layout.
   d. Describe how job planning and layout affect cost.

Related Academic Topics (See Appendix A):

C2, C4, C6

M1, M4

Workplace Skills (See Appendix B):

WP1, WP3, WP6

7. Perform desktop publishing operations.
   a. Perform spell check and grammar check operations.
   b. Produce a multiple page document.
   c. Produce a business card.
   d. Produce an envelope.
   e. Produce a template for a newsletter.
   f. Produce a template for stationary.
   g. Produce a graphic using a paint or drawing program.
   h. Proof and mark manuscripts for typographical errors using proof readers marks.
   i. Compare the quality of printed material from different desktop publishing printers.

Related Academic Topics (See Appendix A):

C5, C6

M1, M4

Workplace Skills (See Appendix B):

WP2, WP5, WP6

8. Perform darkroom techniques.
   a. Use the diagonal method for determining enlargements/reductions of copy.
   b. Produce a halftone negative.
   c. Produce a PMT (photo-mechanical transfer) of copy.

Related Academic Topics (See Appendix A):

C3, C4, C6

M4

S6

Workplace Skills (See Appendix B):

WP4, WP5, WP6

9. Perform metal platemaking operations.
   a. Strip a multiple page flat according to a dummy imposition.
   b. Develop a plate using the single burn method.
   c. Develop a plate using the double burn method.
   d. Develop a plate using the step and repeat method.

Related Academic Topics (See Appendix A):

C1, C2

M4

S6

Workplace Skills (See Appendix B):

WP5, WP6

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10. Perform "black plate" platemaking.
    a. Compare the use of black plates to conventional metal plates and electrostatic masters.
    b. Produce a black plate.

    Related Academic Topics (See Appendix A):

    C1, C2
    M4
    S6

    Workplace Skills (See Appendix B):

    WP1, WP5, WP6
11. Run offset duplicator/press jobs.
    a. Identify and describe the properties and uses of different types of inks including oil-based, rubber-based, and soy-based ink.
    b. Identify and describe the properties and uses of different types and weights of paper including bond, gloss, index, and NCR.
    c. Set up the press for and run envelopes.
    d. Set up the press for and run index stock.

    Related Academic Topics (See Appendix A):

    C4, C6
    S6, S8

    Workplace Skills (See Appendix B):

    WP1, WP5, WP6
12. Perform daily maintenance of the offset duplicator/press.
    a. Perform daily maintenance and clean-up on the press.

    Related Academic Topics (See Appendix A):

    C4
    S6, S8

    Workplace Skills (See Appendix B):

    WP5, WP6
13. Discuss color printing operations.
    a. Describe the process of color printing.
    b. Compare the quality of color copy produced by a color copier to that produced by an offset press.

    Related Academic Topics (See Appendix A):

    C4, C6

    Workplace Skills (See Appendix B):

    WP2, WP6
14. Perform bindery operations.
    a. Perform a double fold and tri-fold on the folder.
    b. Determine the differences between NCR and standard padding.
    c. Produce pads of paper.
    d. Identify operational and safety procedures for using a mechanical or hydraulic paper cutter.
    e. Cut paper to size using a mechanical or hydraulic cutter.

f. Set up and make a standard 3-ring binder hole punch.

Related Academic Topics (See Appendix A):

C4, C6
M4, M5

Workplace Skills (See Appendix B):

WP5, WP6

15. Identify maintenance, repair, and other problem areas related to offset printing.
    a. Discuss procedures for changing blankets on an offset duplicator/press as related to type and size of paper to be run.
    b. Discuss adjustment of roller pressure.
    c. Discuss adjustment of plate to blanket pressure.
    d. Identify common problems related to offset duplicator/press including scumming, tinting, offset, emulsification, chalking, roller stripping, picking, and spraying; and describe possible remedies.
    e. Identify hickeys and describe their cause and remedy.

    Related Academic Topics (See Appendix A):

    C4, C6
    S6

    Workplace Skills (See Appendix B):

    WP5, WP6

16. Identify maintenance and repairs related to folders.
    a. Inspect rollers for glaze and build-up.
    b. Check parallel pressure rollers for correct pressure and alignment.

    Related Academic Topics (See Appendix A):

    C4, C6
    S6

    Workplace Skills (See Appendix B):

    WP5, WP6

SECTION II:

CURRICULUM GUIDE

FOR

GRAPHICS AND PRINT COMMUNICATIONS

August 1, 1995

GRAPHICS AND PRINT COMMUNICATIONS I

GRAPHICS AND PRINT COMMUNICATIONS I
UNIT 1: ORIENTATION (5 days)

Competencies and Suggested Objectives:

1. Review educational, occupational, and leadership opportunities in Graphics and Print Communications.
   a. Review student rules and regulations for the local school.
   b. Investigate career opportunities in Graphics and Print Communications.
   c. Update the students' career and educational plans.
   d. Identify and describe leadership opportunities available from student youth organizations in the school and community, including VICA.

   Related Academic Topics (See Appendix A):
   C4, C6

   Workplace Skills (See Appendix B):
   WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Review educational, occupational, and leadership opportunities in Graphics and Print Communications.*
   a. Review student rules and regulations as applied to the Graphics and Print Communications program.
   b. Have students investigate job opportunities through activities such as employer visits, school-sponsored field trips, on-site resource speakers, help-wanted ads, etc. Have students report their findings to the class.
   c. Have each student update his or her career and educational plans for the future, including documenting past occupational and educational experiences and plans for future experiences.
   d. Discuss leadership and opportunities for demonstrating leadership through school and community youth organizations, including competitive events, award and degree programs, and committee work. Allow students to practice leadership in class and laboratory activities.

Suggested Assessment Strategies:

1. *Review educational, occupational, and leadership opportunities in Graphics and Print Communications.*
   a. Unit test on school rules and regulations.
   b. Oral and/or written report on job opportunities.
   c. Evaluation of students' career and educational plan.
   d. Evaluate participation in class and laboratory leadership activities.

Suggested References:

Local School Student Handbook

Career/Educational Plan

VICA Student Guide

GRAPHICS AND PRINT COMMUNICATIONS I
UNIT 2: SAFETY AND EQUIPMENT FAMILIARIZATION (5 days)

Competencies and Suggested Objectives:

1. Demonstrate general safety procedures used in Graphics and Print Communications.
   a. Describe and apply general safety rules associated with Graphics and Print Communications.
   b. Locate and describe the use of fire safety equipment in the Graphics and Print Communications shop.
   c. Describe and apply safety precautions for using flammable liquids in Graphics and Print Communications applications.
   d. Describe procedures to be taken in case of an accident or injury in the Graphics and Print Communications shop.
   e. Describe and apply personal safety protection including eye, ear, hand, and body protective devices.
   f. Describe and apply proper shop dress codes.

   Related Academic Topics (See Appendix A):
   C1, C4, C6
   S8

   Workplace Skills (See Appendix B):
   WP4, WP5
2. Demonstrate procedures for handling, storing, and disposing of hazardous materials.
   a. Recognize signal words and symbols that indicate severity of a hazard.
   b. Describe methods for reducing hazardous waste.
   c. Describe procedures for storing hazardous waste.
   d. Interpret data found on a hazardous materials safety data sheet (MSD).
   e. Describe general safety procedures to follow for first aid and clean-up in case of an accident involving hazardous materials.
   f. Demonstrate procedures for handling, storing, and disposing of hazardous materials.

   Related Academic Topics (See Appendix A):
   C1, C4, C6
   S5, S8

   Workplace Skills (See Appendix B):
   WP3, WP5
3. Demonstrate familiarity with equipment in the graphics and print communications laboratory and hazards associated with that equipment.
   a. Identify and describe the use of all major pieces of equipment in the graphics and print communications laboratory.

b. Recognize hazards associated with each piece of equipment.

Related Academic Topics (See Appendix A):

C4, C6

S6, S8

Workplace Skills (See Appendix B):

WP5

Suggested Teaching Strategies:

1. *Demonstrate general safety procedures used in graphics and print communications.*
   a. *Provide students with reading materials related to personal and general shop safety. Discuss and demonstrate these procedures with the class.*
   b. *Identify the location of fire safety equipment and describe its operation to the class.*
   c. *Identify the different types of flammable liquids used in the graphics and print communications shop. Discuss and demonstrate the procedures for using these liquids to the students.*
   d. *Discuss procedures to be followed in case of an accident in the graphics and print communications shop. Demonstrate as applicable.*
   e. *Provide students with reading materials on personal safety protective devices including eye protection, hearing protection, hand protection, and body protection devices. Discuss with the class the use of these devices and instances where such devices* ***must*** *be used.*
   f. *Discuss the hazards with the students that can be encountered from improper dress, and the proper dress code for graphics and print communications operations.*
2. *Demonstrate procedures for handling, storing, and disposing of hazardous materials.*
   a. *Provide students with handouts or reading materials on the handling, storing, and disposing of hazardous materials. Discuss the use of signal words and methods for reducing and storing hazardous waste. Provide students with a copy of a hazardous material safety data sheet. Review and interpret the data found on the sheet with the class. Provide students with a second MSD for their interpretation.*
   b. *Provide students with information (text or videotape) on first aid and clean-up procedures in case of a hazardous materials accident. Discuss these procedures with the class. Allow students to practice these procedures through a simulation.*
   c. *Discuss and demonstrate with the students the procedures for handling, storing, and disposing of hazardous waste. Have student practice these procedures through a simulation. Monitor students for compliance with these procedures throughout the year.*

3. *Demonstrate familiarity with the equipment in the graphic and print communications laboratory and the hazards associated with that equipment.*
   a. *Walk students through the laboratory and identify each major piece of equipment. Discuss and provide a brief demonstration of its use.*
   b. *Clearly identify potential hazards associated with the operation of each piece of equipment and demonstrate how these hazards can be avoided. Identify safety devices on each piece of equipment.*

Suggested Assessment Strategies:

1. *Demonstrate general safety procedures used in graphics and print communications.*
   a. *Unit safety test on safety rules and procedures (100% mastery and on file).*
   b. *Monitor students on a daily basis to assure that compliance with safety rules and procedures becomes an integral parts of their work habits.*
2. *Demonstrate procedures for handling, storing, and disposing of hazardous materials.*
   a. *Test on hazardous materials - signal words, reducing and storing, MSD's, and safety first aid procedures.*
   b. *Monitor students on a daily basis to insure that compliance with hazardous materials procedures becomes an integral part of their work habits.*
3. *Demonstrate familiarity with the equipment in the graphics and print communications laboratory and the hazards associated with that equipment.*
   a. *Student Test - Identify major pieces of equipment in the laboratory and describe its use.*
   b. *Student Test - Identify potential hazardous of each piece of equipment.*

Suggested References:

"Graphic Arts - Orientation, Composition, and Paste-up." Stillwater, OK: MAVCC. 1990.

"Hazardous Materials Fingertip Retrieval System." Alexandria, VA: American Vocational Association. 1991.

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

GRAPHICS AND PRINT COMMUNICATIONS I
UNIT 3: APPLIED MATH AND MEASUREMENTS FOR GRAPHICS AND PRINT COMMUNICATIONS (5 days)

Competencies and Suggested Objectives:

1. Perform mathematical operations related to graphics and print communications applications.
   a. Calculate the number of factory size sheets that will be needed to print a specific job, using fraction and decimals.
   b. Calculate ratio and proportion problems associated with mixing chemicals, page size, and image size.
   c. Convert page size from inches to picas.

   Related Academic Topics (See Appendix A):
   M1, M4

   Workplace Skills (See Appendix B):
   WP1, WP6
2. Perform measurement practices as applied to graphics and print communications applications.
   a. Measure linear dimensions for printing materials in inches and fractions of inches, and in centimeters.
   b. Measure type in points and picas.
   c. Measure copy for reduction and enlargement using a proportion wheel to determine percentage setting.
   d. Measure liquid volume for mixing chemicals for darkroom and pressroom operations.

   Related Academic Topics (See Appendix A):
   M1, M4

   Workplace Skills (See Appendix B):
   WP1, WP6

Suggested Teaching Strategies:

1. *Perform mathematical operations related to graphics and print communications applications.*
   a. *Discuss the use of factory sized sheets in the graphics and print communications industry. Discuss the procedures for cutting these sheets to job size with minimum waste. Demonstrate the procedure for calculating the number of factory-sized sheets needed for a job and have students practice this procedure.*

b. *Discuss the use of ratio and proportions in mixing chemicals, determining page size proportion, and determining image size. Demonstrate the mathematical procedures for using ratio and proportion, and have students practice these procedures.*
c. *Discuss the use of picas in the printing industry and demonstrate the mathematical procedures for converting inches to picas and from picas to inches. Have students practice these procedures.*

2. *Perform measurement practices as applied to graphics and print communications applications.*
   a. *Discuss the use of linear measurement. Demonstrate the procedure for measuring dimensions in inches, quarter inches, eighth inches, and sixteenth inches and centimeters. Have students practice measurement to the nearest sixteenth of an inch and the nearest one-tenth of a centimeter.*
   b. *Discuss the use of points and pica measurements in the graphics and print communications industry. Demonstrate the procedures for measuring dimensions in points and picas. Have students practice measurement in points and picas.*
   c. *Discuss the procedures for measuring reduction and enlargement percentages including using mathematical calculations and a proportional wheel. Have students practice calculating enlargement and reduction proportions using the proportional wheel.*
   d. *Discuss the procedures and measurement units for measuring liquid volume. Have students practice measuring liquids.*

Suggested Assessment Strategies:

1. *Perform mathematical operations related to graphics and print communications applications.*
   a. *Student Assignment - Calculate factory size sheets of paper needed for a specific job.*
   b. *Student Assignment - Calculate ratio and proportion.*
   c. *Student Assignment - Convert page size from inches to picas.*
2. *Perform measurement practices as applied to graphics and print communications applications.*
   a. *Student Assignment - Measure dimensions in fractional inches and centimeters.*
   b. *Student Assignment - Measure type in points and picas.*
   c. *Student Assignment - Measure copy for reduction or enlargement to a specific size.*
   d. *Student Assignment - Measure liquid volume.*

Suggested References:

"Graphic Arts - Orientation, Composition, and Paste-up." Stillwater, OK: MAVCC. 1990.

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Photo-Offset Fundamentals." McKnight Publishing. 1986.

GRAPHICS AND PRINT COMMUNICATIONS I
UNIT 4: JOB PLANNING AND LAYOUT (5 days)

Competencies and Suggested Objectives:

1. Perform basic layout procedures.
   a. Identify and describe the use of tools used in layout including the layout table, triangle, line gauges, and pasting equipment.
   b. Position work on a layout table using a T-square.
   c. Design a simple single page layout.

   Related Academic Topics (See Appendix A):
   C4, C6
   M1, M4, M5

   Workplace Skills (See Appendix B):
   WP1, WP6

Suggested Teaching Strategies:

1. *Perform basic layout procedures.*
   a. *Display layout tools and describe how these tools are used in the manual layout process. Have students practice these procedures.*
   b. *Demonstrate the procedure for aligning the page on the layout table and then aligning work on the page using a T-square. Have students practice these procedures.*
   c. *Discuss the principles of design used in preparing a simple page and demonstrate the procedures for performing this job. Have students practice these procedures.*

Suggested Assessment Strategies:

1. *Perform basic layout procedures.*
   a. *Test - Lay out equipment, tools, and uses.*
   b. *Student Exercise - Aligning the page and work on the page.*
   c. *Student Exercise - Design a simple single page layout.*

Suggested References:

"Graphic Arts - Orientation, Composition, and Paste-up." Stillwater, OK: MAVCC. 1990.

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Photo-Offset Fundamentals." McKnight Publishing. 1986.

GRAPHICS AND PRINT COMMUNICATIONS I
UNIT 5: INTRODUCTION TO DESKTOP PUBLISHING **(30 days)**

Competencies and Suggested Objectives:

1. Perform basic computer skills associated with desktop publishing.
   a. Identify the parts of a computer desktop publishing system and describe their functions.
   b. Define terms associated with computer usage including cursor, pointer, document, diskette, hard drive, etc.
   c. "Boot" the computer and bring applications software on-line.
   d. Initialize (format) a diskette.
   e. Identify different types of software used in desktop publishing and describe its uses including word processing software, scanning software, desktop publishing, clip art, and drawing software.

   Related Academic Topics (See Appendix A):
   C4, C6
   S8

   Workplace Skills (See Appendix B):
   WP2, WP5, WP6
2. Perform basic word processing operations.
   a. Create a file, set margins, input text, spell check, edit and proof, save to disk, print, and exit.

   Related Academic Topics (See Appendix A):
   C4, C6

   Workplace Skills (See Appendix B):
   WP2, WP5, WP6
3. Perform desktop publishing operations.
   a. Define terms associated with desktop publishing systems and desktop publishing operations.
   b. Describe and use desktop publishing and page layout software features including menus, rulers, scroll bars, clip boards, tool boxes, and graphic interfaces (Windows).
   c. Scan graphics and text to a desktop publishing file.
   d. Select appropriate type style (font) and size for different parts of a layout
   e. Perform desktop publishing operations including creating a page set-up, importing text and graphics, inputting commands for font size, aligning and leading, producing different sizes of lines and rules, inserting black-outs for photograph, saving file to diskette, and printing hard copy.
   f. Correctly exit the desktop publishing software and operating system.

Related Academic Topics (See Appendix A):
C4, C6
Workplace Skills (See Appendix B):
WP2, WP5, WP6

Suggested Teaching Strategies:

1. *Perform basic computer skills associated with desktop publishing.*
   a. *Display a desktop publishing computer system and identify each of its component parts including the computer, monitor, pointing device, scanner, and printer. Identify features and controls for each component.*
   b. *Define and discuss terms associated with computer use with the class.*
   c. *Demonstrate the procedure for booting the computer system and bringing different software packages on-line. Have students practice entering and exiting software packages.*
   d. *Demonstrate the procedure for intializing (formatting) a diskette. Discuss the concept of regular density, and high density and how to identify the different diskettes.*
   e. *Identify the different types of software packages used in desktop publishing and discuss/describe their features and applications with the class.*
2. *Perform basic word processing operations.*
   a. *Demonstrate basic word processing operations to the class. Have students practice these operations to develop basic proficiency.*
3. *Perform desktop publishing operations.*
   a. *Define and discuss with the class, terms associated with desktop publishing software and operations, including the following: clip art, dpi, handles, icons, etc.*
   b. *Demonstrate the use of the desktop publishing features to the class. Have students practice using these features to develop basic proficiency.*
   c. *Demonstrate procedures for scanning graphics to a desktop publishing file and scanning text to a desktop publishing file. Have students practice these procedures and develop basic proficiency.*
   d. *Discuss the principles for selection type style and size for different applications (text or display). Show students the different type styles and sizes available. Demonstrate the procedures for selecting and changing type style and size. Have students practice these procedures.*
   e. *Demonstrate commands and procedures for performing desktop publishing operations. Provide students with documentation on the desktop publishing system, and have them practice each of the procedures demonstrated.*
   f. *Demonstrate the proper procedure for exiting the desktop publishing system, the computer operating system, and shutting down the computer. Have students practice these procedures.*

Suggested Assessment Strategies:

1. *Perform basic computer skills associated with desktop publishing.*
   a. *Test - Parts of the computer and their functions and computer terminology.*
   b. *Student Exercise - Boot the computer and application software packages.*
   c. *Student Exercise - Initialize a diskette.*
   d. *Test - Software applications packages for desktop publishing.*
2. *Perform basic word processing operations.*
   a. *Student Exercise - Word processing operations.*
3. *Perform desktop publishing operations.*
   a. *Test - Desktop publishing terminology and procedures.*
   b. *Student Exercise - Use desktop publishing features and commands.*
   c. *Student Exercise - Scan text and graphics.*
   d. *Student Exercise - Select type styles and sizes.*
   e. *Student Exercise - Perform desktop publishing operations.*
   f. *Student Exercise - Exiting a desktop publishing system.*

Suggested References:

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Photo-Offset Fundamentals." McKnight Publishing. 1986.

"Basics of Desktop Publishing." Mid-America Vocational Curriculum Consortium. 1991.

Word Processing Software and Documentation

Desktop Publishing Software and Documentation

Computer-Aided Design Software and Documentation

Data Conversion Software and Documentation

GRAPHICS AND PRINT COMMUNICATIONS I
UNIT 6: BASIC PHOTOGRAPHY AND DARKROOM PROCESSES (5 days)

Competencies and Suggested Objectives:

1. Perform basic set-up and adjustments of a process camera.
   a. Identify and describe the functions of the basic parts of a process camera including copy board, bellows, lens and F-stop, lights, and camera back.
   b. Use a proportional wheel to set up the process camera to make a given size enlargement or reduction.
   c. Select the proper F-stop setting for a given copy.
   d. Select the proper exposure (shutter speed) for a given copy.
   e. Identify and describe the different types of copy that are made on a process film.

   Related Academic Topics (See Appendix A):
   C4, C6
   M1, M4
   S6, S8

   Workplace Skills (See Appendix B):
   WP5, WP6
2. Perform basic darkroom procedures.
   a. Select proper clothing and other protective devices for handling chemicals in the darkroom.
   b. Set up processing trays in proper sequence.
   c. Utilize proper procedures for handling, mixing, and storing chemicals.
   d. Utilize proper procedures for cleaning the darkroom and disposing of used chemicals.

   Related Academic Topics (See Appendix A):
   C4
   M1, M4
   S5, S8

   Workplace Skills (See Appendix B):
   WP5, WP6
3. Produce a process negative.
   a. Describe the types films that are used in process cameras.
   b. Utilize proper procedures for handling and cutting film.
   c. Set up copy and film, adjust camera, and expose film to produce a negative.
   d. Process exposed film including developing, fixing, washing, and drying to produce a negative.

Related Academic Topics (See Appendix A):
C4, C6
S5, S6
Workplace Skills (See Appendix B):
WP5, WP6

Suggested Teaching Strategies:

1. *Perform basic set-up and adjustment of a process camera.*
   a. *Show students the different parts of the process camera and describe their functions.*
   b. *Demonstrate the procedure for using a proportional wheel to set up a process camera for enlargement and reduction. Have students practice this procedure.*
   c. *Discuss the use of the F-stop as related to negative quality. Demonstrate the procedures for determining and setting the proper F-stop for a given copy. Have students practice finding and setting the proper F-stop.*
   d. *Discuss the use of exposure as related to negative quality. Demonstrate the procedures for determining and setting exposure for a given copy. Have students practice finding and setting the proper exposure.*
   e. *Describe the different types of copy that are made on half-tone film including line, half-tone, and color. Apply each type to its use in industry.*
2. *Perform basic darkroom procedures.*
   a. *Discuss the proper type of clothing to be worn in the darkroom and the other protective devices that are used in the darkroom. Monitor students continuously to insure that they are wearing proper clothing and using other protective devices.*
   b. *Discuss the order and functions of each tray used in a darkroom. Demonstrate the procedure for setting up processing trays in the proper sequence. Have students practice this procedure.*
   c. *Discuss the proper procedures for mixing chemicals including chemical-to-water ratio of developer and fixer. Demonstrate these procedures, and have students practice them.*
   d. *Discuss precautions related to cleaning a darkroom and disposing of chemicals according to environmental regulations. Demonstrate these procedures and monitor students continuously to ensure that these procedures are being followed.*
3. *Produce a process negative.*
   a. *Describe and discuss with the students the different types of films that are used in a process camera.*
   b. *Demonstrate the proper procedures for handling and cutting film. Have students practice these procedures.*

c. *Demonstrate the procedures for setting up copy and film on the camera, adjusting the camera for the shoot, and exposing the film. Have students practice these procedures.*
d. *Demonstrate procedures for processing exposed film including developing, fixing, washing, and drying. Have students practice these procedures.*

Suggested Assessment Strategies:

1. *Perform basic set-up and adjustments of a process camera.*
   a. *Test on parts and functions of the process camera.*
   b. *Student Exercise - Set up the process camera for enlargements and reductions.*
   c. *Student Exercise - Select proper F-stop.*
   d. *Student Exercise - Select proper exposure.*
   e. *Student Exercise - Identify different copy types.*
2. *Perform basic darkroom procedures.*
   a. *Test on protective devices and proper clothing.*
   b. *Student Exercise - Set up processing trays.*
   c. *Student Exercise - Handle, mix, and store chemicals.*
   d. *Student Exercise - Darkroom cleaning and chemical disposal procedures.*
3. *Produce a process negative.*
   a. *Test on types of films.*
   b. *Student Exercise - Handle and cut film.*
   c. *Student Exercise - Set up, adjust, and expose film.*
   d. *Student Exercise - Process exposed film.*

Suggested References:

"Graphic Arts - Process Camera, Stripping, and Platemaking." Stillwater, OK: MAVCC. 1990.

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Photo-Offset Fundamentals." McKnight Publishing. 1986.

GRAPHICS AND PRINT COMMUNICATIONS I
UNIT 7: STRIPPING AND PLATEMAKING **(10 days)**

Competencies and Suggested Objectives:

1. Perform stripping operations.
   a. Identify and describe the use of tools and equipment used in the stripping process including masking sheets, light table, stripping knife, tape, etc.
   b. Strip a single negative flat.

   Related Academic Topics (See Appendix A):
   C4, C6
   M1, M4

   Workplace Skills (See Appendix B):
   WP1, WP5, WP6
2. Perform platemaking operations.
   a. Identify and describe the use of tools and equipment used in platemaking.
   b. Identify and describe the use of the different types of plates and platemakers.
   c. Expose a single negative plate.

   Related Academic Topics (See Appendix A):
   C4, C6
   S6

   Workplace Skills (See Appendix B):
   WP5, WP6

Suggested Teaching Strategies:

1. *Perform stripping operations.*
   a. Display and discuss the different tools and equipment used in the stripping process.
   b. Discuss and demonstrate the steps and procedures in the stripping process including securing and positioning the negative, cutting the window, and opaquing undesirable images. Have students practice these procedures.
2. *Perform platemaking operations.*
   a. Display and discuss the use of tools and equipment used in the platemaking process.
   b. Display and discuss the uses of different types of plates and platemakers used in offset press operations.
   c. Discuss and demonstrate the procedures for exposing a plate including aligning the flat, exposing the plate, and developing and finishing the plate. Have students practice these procedures.

Suggested Assessment Strategies:

1. *Perform stripping operations.*
   a. *Student test on tools and equipment used in stripping.*
   b. *Student Exercise - Strip a single negative flat.*
2. *Perform platemaking operations.*
   a. *Test on tools and equipment and different types of plates and platemakers.*
   b. *Student Exercise - Expose a single negative plate.*

Suggested References:

"Graphic Arts - Process Camera, Stripping, and Platemaking." Stillwater, OK: MAVCC. 1990.

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Photo-Offset Fundamentals." McKnight Publishing. 1986.

GRAPHICS AND PRINT COMMUNICATIONS I
UNIT 8: FUNDAMENTALS OF PRINT AND DUPLICATION (25 days)

Competencies and Suggested Objectives:

1. Describe the role of copiers in printing and duplication.
   a. Describe the operating principles of a copier.
   b. Describe jobs for which high speed copiers are best suited.

   Related Academic Topics (See Appendix A):
   C4, C6
   S6

   Workplace Skills (See Appendix B):
   WP4, WP5, WP6
2. Perform set-up of an offset duplicator/press.
   a. Compare an offset duplicator/press to a copier.
   b. Identify and describe the function of the major systems and units of an offset duplicator/press.
   c. Set up basic paper feed and delivery system for a offset duplicator/press including adjusting feeder to paper size, setting up the register board, setting the impression, setting up the receiver tray/chain delivery system, and adjusting air for stock weight.

   Related Academic Topics (See Appendix A):
   C4, C6
   S6

   Workplace Skills (See Appendix B):
   WP2, WP4, WP5

Suggested Teaching Strategies:

1. *Describe the role of copiers in printing and duplication.*
   a. Discuss the operating principles of copiers with the students.
   b. Describe jobs for which high speed copiers are used. If possible, take students on a field trip to observe high speed copiers in use.
2. *Perform set-up of an offset duplicator/press.*
   a. Discuss with the students the differences in an offset duplicator/press and a copier, including the advantages and disadvantages of both.
   b. Identify the major components and systems on an offset duplicator/press to the students and discuss the functions of each system and unit.
   c. Discuss and demonstrate the procedures for setting up paper feed and delivery for an offset duplicator/press. Have students practice these procedures.

Suggested Assessment Strategies:

1. *Describe the role of copiers in printing and duplication.*
   a. *Test on operating principles of high speed copiers and jobs for which they are suited.*
2. *Perform set-up of an offset duplicator/press.*
   a. *Test on comparing a offset duplicator/press to a high speed copier and on systems and units of a duplicator/press.*
   b. *Student Exercise - Set up paper feed on an offset duplicator/press.*

Suggested References:

"Graphic Arts - Press and Finishing Process." Stillwater, OK: MAVCC. 1991.

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Photo-Offset Fundamentals." McKnight Publishing. 1986.

GRAPHICS AND PRINT COMMUNICATIONS I
UNIT 9: OPERATION OF OFFSET DUPLICATORS/PRESSES **(25 days)**

Competencies and Suggested Objectives:

1. Prepare an offset duplicator/press for printing.
   a. Mix fountain solution according to type of plate.
   b. Set fountain solution flow to moisture rollers.
   c. Apply ink on ink fountain roller
   d. Install a master plate to plate cylinder.

   Related Academic Topics (See Appendix A):
   C4
   M1, M4
   S 5

   Workplace Skills (See Appendix B):
   WP1, WP5, WP6
2. Operate an offset duplicator/press.
   a. Run a one page (8 1/2" x 11") job on 20 lb. paper stock.

   Related Academic Topics (See Appendix A):
   C5, C6
   M1, M4

   Workplace Skills (See Appendix B):
   WP3, WP5, WP6

Suggested Teaching Strategies:

1. *Prepare an offset duplicator/press for printing.*
   a. *Discuss and demonstrate the procedure for mixing fountain solution for different types of plates. Have students practice the procedure.*
   b. *Discuss and demonstrate the procedure for setting fountain solution flow to moisture rollers. Have students practice the procedures.*
   c. *Discuss and demonstrate the procedures for removing ink from the can and applying it to the ink fountain roller. Have students practice these procedures.*
   d. *Discuss and demonstrate the procedures for installing a master plate to the plate cylinder. Have students practice these procedures.*
2. *Operate an offset duplicator/press.*
   a. *Discuss and demonstrate the procedures for running a one page job on 20-lb. stock. Have students practice these procedures.*

Suggested Assessment Strategies:

1. *Prepare an offset duplicator/press for printing.*
   a. *Student Exercise - Mix fountain solution.*
   b. *Student Exercise - Set flow of fountain solution.*
   c. *Student Exercise - Apply ink to the ink fountain roller.*
   d. *Student Exercise - Install a plate to the plate cylinder.*
2. *Operate an offset duplicator/press.*
   a. *Student Exercise - Run a one page job.*

Suggested References:

"Graphic Arts - The Press and Finishing Processes." Stillwater, OK: MAVCC. 1991.

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Photo-Offset Fundamentals." McKnight Publishing. 1986.

GRAPHICS AND PRINT COMMUNICATIONS I
UNIT 10: BINDERY OPERATIONS (15 days)

Competencies and Suggested Objectives:

1. Perform bindery operations.
   a. Discuss different types of binding operations and their applications including folding, stitching, spiral, tipping, padding, hot glue, and trimming.
   b. Perform a single-fold.
   c. Collate, drill, and stitch printed materials.

   Related Academic Topics (See Appendix A):
   C4, C6
   M1, M4

   Workplace Skills (See Appendix B):
   WP3, WP5, WP6

Suggested Teaching Strategies:

1. Perform bindery operations.
   a. Discuss with the students the different types of binding operations. Identify their applications in different jobs.
   b. Discuss and demonstrate the procedure for setting up a folder to make a single-fold. Have students practice this procedure.
   c. Discuss and demonstrate the procedure for collating, drilling, and stitching 8 1/2" x 11" printed materials.

Suggested Assessment Strategies:

1. Perform bindery operations.
   a. Test on different bindery operations and their applications.
   b. Student Exercise - Perform a single-fold.
   c. Student Exercise - Collate, drill, and stitch.

Suggested References:

"Graphic Arts - The Press and Finishing Processes." Stillwater, OK: MAVCC. 1991.

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Photo-Offset Fundamentals." McKnight Publishing. 1986.

GRAPHICS AND PRINT COMMUNICATIONS II

GRAPHICS AND PRINT COMMUNICATIONS II
UNIT 1: ORIENTATION (REVIEW AND REINFORCEMENT) (5 days)

Competencies and Suggested Objectives:

1. Review educational, occupational, and leadership opportunities in graphics and print communications.
   a. Review student rules and regulations for the local school.
   b. Investigate career opportunities in graphics and print communications.
   c. Update the students' career and educational plans.
   d. Identify and describe leadership opportunities available from student youth organizations in the school and community, including VICA.

   Related Academic Topics (See Appendix A):
   C4, C6,

   Workplace Skills (See Appendix B):
   WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Review educational, occupational, and leadership opportunities in graphics and print communications.*
   a. *Review student rules and regulations as applied to the graphics and print communications program.*
   b. *Have students investigate job opportunities through activities such as employer visits, school-sponsored field trips, on-site resource speakers, help-wanted ads, etc. Have students report their findings to the class.*
   c. *Have each student update his or her career and educational plans for the future, including documenting past occupational and educational experiences and plans for future experiences.*
   d. *Discuss leadership and opportunities for demonstrating leadership through school and community youth organizations, including competitive events, award and degree programs, and committee work. Allow students to practice leadership in class and laboratory activities.*

Suggested Assessment Strategies:

1. *Review educational, occupational, and leadership opportunities in graphics and print communications.*
   a. *Unit test on school rules and regulations.*
   b. *Oral and/or written report on job opportunities.*
   c. *Evaluation of students' career and educational plan.*
   d. *Evaluate participation in class and laboratory leadership activities.*

Suggested References:

Local School Student Handbook

Career/Educational Plan

VICA Student Guide

GRAPHICS AND PRINT COMMUNICATIONS II
UNIT 2: SAFETY AND EQUIPMENT FAMILIARIZATION (REVIEW AND REINFORCEMENT) (5 days)

Competencies and Suggested Objectives:

1. Demonstrate general safety procedures used in graphics and print communications.
   a. Describe and apply general safety rules associated with graphics and print communications.
   b. Locate and describe the use of fire safety equipment in the graphics and print communications shop.
   c. Describe and apply safety precautions for using flammable liquids in graphic and print communications applications.
   d. Describe procedures to be taken in case of an accident or injury in the graphics and print communications shop.
   e. Describe and apply personal safety protection including eye, ear, hand, and body protective devices.
   f. Describe and apply proper shop dress codes.

   Related Academic Topics (See Appendix A):
   C1, C4, C6
   S8

   Workplace Skills (See Appendix B):
   WP4, WP5
2. Demonstrate procedures for handling, storing, and disposing of hazardous materials.
   a. Recognize signal words and symbols that indicate severity of a hazard.
   b. Describe methods for reducing hazardous waste.
   c. Describe procedures for storing hazardous waste.
   d. Interpret data found on a hazardous materials safety data sheet (MSD).
   e. Describe general safety procedures to follow for first aid and clean-up in case of an accident involving hazardous materials.
   f. Demonstrate procedures for handling, storing, and disposing of hazardous materials.

   Related Academic Topics (See Appendix A):
   C1, C4, C6
   S5, S8

   Workplace Skills (See Appendix B):
   WP3, WP5
3. Demonstrate familiarity with equipment in the graphics and print communications laboratory and hazards associated with that equipment.
   a. Identify and describe the use of all major pieces of equipment in the graphics and print communications laboratory.

b. Recognize hazards associated with each piece of equipment.

Related Academic Topics (See Appendix A):

C4, C6

S6, S8

Workplace Skills (See Appendix B):

WP5

Suggested Teaching Strategies:

1. *Demonstrate general safety procedures used in graphics and print communications.*
   a. *Provide students with reading materials related to personal and general shop safety. Discuss and demonstrate these procedures with the class.*
   b. *Identify the location of fire safety equipment and describe its operation to the class.*
   c. *Identify the different types of flammable liquids used in the graphics and print communications shop. Discuss and demonstrate the procedures for using these liquids to the students.*
   d. *Discuss procedures to be followed in case of an accident or injuries in the graphics and print communications shop. Demonstrate as applicable.*
   e. *Provide students with reading materials on personal safety protective devices including eye protection, hearing protection, hand protection, and body protection devices. Discuss with the class the use of these devices and instances where such devices **must** be used.*
   f. *Discuss with the students the hazards that can be encountered from improper dress and the proper dress code for graphics and print communications operations.*
2. *Demonstrate procedures for handling, storing, and disposing of hazardous materials.*
   a. *Provide students with handouts or reading materials on the handling, storing, and disposing of hazardous materials. Discuss the use of signal words and methods for reducing and storing hazardous waste. Provide students with a copy of a hazardous material safety data sheet. Review and interpret the data found on the sheet with the class. Provide students with a second MSD for their interpretation.*
   b. *Provide students with information (text or videotape) on first aid and clean-up procedures in case of a hazardous material accident. Discuss these procedures with the class. Allow students to practice these procedures through a simulation.*
   c. *Discuss with the students and demonstrate the procedures for handling, storing, and disposing of hazardous waste. Have student practice these procedures through a simulation. Monitor students for compliance with these procedures throughout the year.*

3. *Demonstrate familiarity with the equipment in the graphics and print communications laboratory and the hazards associated with that equipment.*
   a. *Walk students through the laboratory and identify each major piece of equipment. Discuss and provide a brief demonstration of its use.*
   b. *Clearly identify potential hazards associated with the operation of each piece of equipment, and demonstrate how these hazards can be avoided. Identify safety devices on each piece of equipment.*

Suggested Assessment Strategies:

1. *Demonstrate general safety procedures used in graphics and print communications.*
   a. *Unit safety test on safety rules and procedures (100% mastery and on file).*
   b. *Monitor students on a daily basis to assure that compliance with safety rules and procedures becomes an integral part of their work habits.*
2. *Demonstrate procedures for handling, storing, and disposing of hazardous materials.*
   a. *Test on hazardous materials - signal words, reducing and storing, MSD's, and safety first aid procedures.*
   b. *Monitor students on a daily basis to insure that compliance with hazardous materials procedures becomes an integral part of their work habits.*
3. *Demonstrate familiarity with the equipment in the graphics and print communications laboratory and the hazards associated with that equipment.*
   a. *Student Test - Identify major pieces of equipment in the laboratory and describe its use.*
   b. *Student Test - Identify potential hazardous of each piece of equipment.*

Suggested References:

"Graphic Arts - Orientation, Composition, and Paste-up." Stillwater, OK: MAVCC. 1990.

"Hazardous Materials Fingertip Retrieval System." Alexandria, VA: American Vocational Association. 1991.

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

GRAPHICS AND PRINT COMMUNICATIONS II
UNIT 3: EMPLOYABILITY SKILLS **(5 days)**

Competencies and Suggested Objectives:

1. Develop skills and resources necessary to gain employment.
   a. Develop a personal data sheet (resume).
   b. Develop a cover letter (letter of application).
   c. Practice interview skills.
   d. Complete different types of job application forms.
   e. Develop a portfolio of projects and jobs completed.

   Related Academic Topics (See Appendix A):
   C3, C4, C6

   Workplace Skills (See Appendix B):
   WP3, WP3, WP6

Suggested Teaching Strategies:

1. *Develop skills and resources necessary gain employment.*
   a. *Provide students with reading materials on developing a personal data sheet. Discuss this material in class. Have students develop, publish, and print a personal data sheet.*
   b. *Discuss procedures and format for developing a cover letter to apply for a job. Have students write, publish, and print a letter.*
   c. *Discuss procedures to follow while interviewing for a job. Have students practice these procedures in class.*
   d. *Discuss procedures for completing a job application form. Provide students with at least two different application forms and have them complete both forms.*
   e. *Discuss concepts and practices in developing a portfolio. Assist students in developing their own portfolios of work completed in the program.*

Suggested Assessment Strategies:

1. *Develop skills and resources necessary to gain employment.*
   a. *Student Exercise - Develop a personal data sheet.*
   b. *Student Exercise - Write a cover letter for a job application.*
   c. *Student Exercise - Participate in a practice interview.*
   d. *Student Exercise - Complete job application form(s).*
   e. *Student Exercise - Develop a portfolio of projects and work.*

Suggested References:

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Graphic Arts - Orientation, Composition, and Paste-up." Stillwater, Ok: Mid-America Vocational Curriculum Consortium. 1990.

GRAPHICS AND PRINT COMMUNICATIONS II
UNIT 4: JOB PLANNING AND LAYOUT (5 days)

Competencies and Suggested Objectives:

1. Perform job planning and layout tasks.
   a. Describe the different types of layouts and their applications, including thumbnail sketch, rough layout, and comprehensive layout.
   b. Create a 4-page and 8-page dummy imposition.
   c. Create a multiple page comprehensive layout.
   d. Describe how job planning and layout affect cost.

   Related Academic Topics (See Appendix A):
   C2, C4, C6
   M1, M4

   Workplace Skills (See Appendix B):
   WP1, WP3, WP6

Suggested Teaching Strategies:

1. *Perform job planning and layout tasks.*
   a. *Discuss with the class the different types of layouts and their applications. Provide examples of these different layouts.*
   b. *Discuss and demonstrate procedures for creating a 4-page and 8-page dummy imposition. Provide examples of each type. Have students practice these procedures.*
   c. *Discuss procedures for creating multiple page comprehensive layouts. Provide examples of these layouts. Have students practice these procedures.*
   d. *Discuss factors related to job planning and layout that are related to cost. Present different "what it" scenarios that show how job planning and layout can reduce the cost of a job.*

Suggested Assessment Strategies:

1. *Test on different types of layouts and their applications.*
2. *Student Assignment - Create a 4-page dummy imposition.*
3. *Student Assignment - Create an 8-page dummy imposition*
4. *Student Assignment - Create multiple page comprehensive layouts*
5. *Test on factors related to job planning, layout, and job cost.*

Suggested References:

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Graphic Arts - Orientation, Composition, and Paste-up." Stillwater, Ok: Mid-America Vocational Curriculum Consortium. 1990.

GRAPHICS AND PRINT COMMUNICATIONS II
UNIT 5: DESKTOP PUBLISHING (40 days)

Competencies and Suggested Objectives:

1. Perform desktop publishing operations.
   a. Perform spell check and grammar check operations.
   b. Produce a multiple page document.
   c. Produce a business card.
   d. Produce an envelope.
   e. Produce a template for a newsletter.
   f. Produce a template for stationary.
   g. Produce a graphic using a paint or drawing program.
   h. Proof and mark manuscripts for typographical errors using proof readers marks.
   i. Compare the quality of printed material from different desktop publishing printers.

   Related Academic Topics (See Appendix A):
   C5, C6
   M1, M4

   Workplace Skills (See Appendix B):
   WP2, WP5, WP6

Suggested Teaching Strategies:

1. Perform desktop publishing operations.
   a. Discuss procedures for spell checking and grammar checking. Demonstrate these procedures to the class. Have students practice these procedures.
   b. Discuss procedures for producing a multi-page document. Demonstrate these procedures to the students. Have students practice the procedures.
   c. Discuss procedures for setting up and producing a business card. Demonstrate the procedures. Have students practice on several different formats for business cards incorporating text and graphics.
   d. Discuss procedures for producing an envelope and demonstrate to the students. Have students produce several different sizes and styles of business envelopes.
   e. Discuss the use of templates and the procedures for creating a template for a newsletter. Have students practice these procedures and develop a template for producing a newsletter.
   f. Discuss the procedures for creating a template for stationary. Have students create a template and different stationary forms. Have students modify this template for customized applications.

g. *Discuss and demonstrate the procedures and commands for creating a graphic, using a paint or drawing program. Have students create a graphic, save to a disk, and then incorporate into a desktop publishing document.*

h. *Identify and describe the use of proofreaders marks with the students. Demonstrate the procedures for proofreading, and have the students practice proofreading and marking documents.*

i. *Discuss with the class the characteristics of print quality and how these relate to the different types of computer printers used in desktop publishing (dot matrix, laser, ink jet, plotters, etc.). Compare the quality of print from each different printer type with the students.*

Suggested Assessment Strategies:

1. *Perform desktop publishing operations.*
   a. *Student Exercise - Perform spell check and grammar check operations.*
   b. *Student Exercise - Produce a multiple page document.*
   c. *Student Exercise - Produce a business card.*
   d. *Student Exercise - Produce an envelope.*
   e. *Student Exercise - Produce a template for a newsletter.*
   f. *Student Exercise - Produce a template for stationary.*
   g. *Student Exercise - Produce a graphic.*
   h. *Student Exercise - Proof and mark manuscripts.*
   i. *Student Exercise - Compare the quality of printed material.*

Suggested References:

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Graphic Arts - Orientation, Composition, and Paste-up." Stillwater, OK: Mid-America Vocational Curriculum Consortium. 1990.

Word Processing Software and Documentation

Desktop Publishing Software and Documentation

Computer-Aided Design Software and Documentation

Data Conversion Software and Documentation

GRAPHICS AND PRINT COMMUNICATIONS II
UNIT 6: DARKROOM TECHNIQUES **(5 days)**

Competencies and Suggested Objectives:

1. Perform darkroom techniques.
   a. Use the diagonal method for determining enlargements/reductions of copy.
   b. Produce a halftone negative.
   c. Produce a PMT (photo-mechanical transfer) of copy.

   Related Academic Topics (See Appendix A):
   C3, C4, C6
   M4
   S6

   Workplace Skills (See Appendix B):
   WP4, WP5, WP6

Suggested Teaching Strategies:

1. Perform darkroom techniques.
   a. Discuss and demonstrate the diagonal methods for determining enlargements and reductions. Have students practice these procedures.
   b. Discuss and demonstrate the procedure for producing a halftone negative. Have students practice these procedures.
   c. Discuss and demonstrate the process for making a PMT. Have students demonstrate these procedures.

Suggested Assessment Strategies:

1. Perform darkroom techniques.
   a. Student Assignment - Determine enlargement/reductions using the diagonal method.
   b. Student Assignment - Produce a halftone negative.
   c. Student Assignment - Produce a PMT.

Suggested References:

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Graphic Arts - Process Camera, Stripping, and Platework." Stillwater, Ok: Mid-America Vocational Curriculum Consortium. 1990.

GRAPHICS AND PRINT COMMUNICATIONS II
UNIT 7: MASTER AND PLATEMAKING (15 days)

Competencies and Suggested Objectives:

1. Perform metal platemaking operations.
   a. Strip a multiple page flat according to a dummy imposition.
   b. Develop a plate using the single burn method.
   c. Develop a plate using the double burn method.
   d. Develop a plate using the step and repeat method.

   Related Academic Topics (See Appendix A):
   C1, C2
   M4
   S6

   Workplace Skills (See Appendix B):
   WP5, WP6
2. Perform "black plate" platemaking.
   a. Compare the use of black plates to conventional metal plates and electrostatic masters.
   b. Produce a black plate.

   Related Academic Topics (See Appendix A):
   C1, C2
   M4
   S6

   Workplace Skills (See Appendix B):
   WP1, WP5, WP6

Suggested Teaching Strategies:

1. *Perform platemaking operations.*
   a. Discuss and demonstrate procedures for creating a multiple page flat from a dummy imposition. Have students practice these procedures.
   b. Discuss and demonstrate the procedures for developing a plate using the single burn method. Have students practice these procedures.
   c. Discuss and demonstrate the procedures for developing a plate using the double burn method. Have students practice these procedures.
   d. Discuss and demonstrate the procedures for developing a plate using the step and repeat method. Have students practice these procedures.
2. *Perform "black plate" platemaking.*
   a. Discuss and compare the use of black plates to conventional metal plates and electrostatic masters with the students.
   b. Discuss and demonstrate the procedures for producing black plates. Have students practice these procedures.

Suggested Assessment Strategies:

1. *Perform platemaking operations.*
   a. *Student Exercise - Strip a multiple page flat.*
   b. *Student Exercise - Develop a plate using the single burn method.*
   c. *Student Exercise - Develop a plate using the double burn method.*
   d. *Student Exercise - Develop a plate using the step and repeat method.*
2. *Perform "black plate" platemaking.*
   a. *Student Assignment - Compare the use of black plates to conventional plates.*
   b. *Student Exercise - Produce a black plate.*

Suggested References:

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Graphic Arts - Process Camera, Stripping, and Platework." Stillwater, OK: Mid-America Vocational Curriculum Consortium. 1990.

GRAPHICS AND PRINT COMMUNICATIONS II
UNIT 8: OFFSET DUPLICATOR/PRESS OPERATIONS (40 days)

Competencies and Suggested Objectives:

1. Run offset duplicator/press jobs.
   a. Identify and describe the properties and uses of different types of inks including oil-based, rubber-based, and soy-based ink.
   b. Identify and describe the properties and uses of different types and weights of paper including bond, gloss, index, and NCR.
   c. Set up the press for and run envelopes.
   d. Set up the press for and run index stock.

   Related Academic Topics (See Appendix A):
   C4, C6
   S6, S8

   Workplace Skills (See Appendix B):
   WP1, WP5, WP6
2. Perform daily maintenance of the offset duplicator/press.
   a. Perform daily maintenance and clean-up on the press.

   Related Academic Topics (See Appendix A):
   C4
   S6, S8

   Workplace Skills (See Appendix B):
   WP5, WP6
3. Discuss color printing operations.
   a. Describe the process of color printing.
   b. Compare the quality of color copy produced by a color copier to that produced by an offset press.

   Related Academic Topics (See Appendix A):
   C4, C6

   Workplace Skills (See Appendix B):
   WP2, WP6

Suggested Teaching Strategies:

1. Run offset duplicator/press jobs.
   a. Describe and discuss the properties and uses of different types of inks including oil-based, rubber-based, and soy-based ink to the class. Show the class each different type of ink so that they can identify them.
   b. Describe the properties and uses of different types and weights of paper including bond, gloss, index, and NCR to the class. Show the class each type so that they can identify it on sight.

c. *Discuss and demonstrate the procedure for setting-up the press and running envelopes. Have students practice this procedure.*
d. *Discuss and demonstrate the procedure for setting-up the press and running index stock. Have students demonstrate these procedures.*

2. *Perform daily maintenance of the offset duplicator/press.*
   a. *Discuss and demonstrate the procedure for performing daily maintenance and clean-up on the press. Have students demonstrate these procedures.*
3. *Discuss color printing operations.*
   a. *Assign reading materials to the class on color printing. Discuss and describe the process of color printing with the class, including the process for multi-color and process color separations.*
   b. *Discuss the differences in products made by color copiers and printing presses. Compare the quality of color copy produced by a color copier to that produced by an offset press.*

Suggested Assessment Strategies:

1. *Run offset duplicator/press jobs.*
   a. *Student Assignment - Identify and describe the properties and uses of different types of inks including oil-based, rubber-based, and soy-based ink.*
   b. *Student Assignment - Identify and describe the properties and uses of different types and weights of paper including bond, gloss, index, and NCR.*
   c. *Student Exercise - Set up the press and run envelopes.*
   d. *Student Exercise - Set up the press and run index stock.*
2. *Perform daily maintenance of the offset duplicator/press.*
   a. *Student Exercise - Perform daily maintenance and clean-up on the press.*
3. *Discuss color printing operations.*
   a. *Unit Test - Describe the process of color printing.*
   b. *Student Assignment - Compare the quality of color copy produced by a color copier to that produced by an offset press.*

Suggested References:

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Graphic Arts - The Press and Finishing Processes." Stillwater, OK: Mid-America Vocational Curriculum Consortium. 1991.

GRAPHICS AND PRINT COMMUNICATIONS II
UNIT 9: BINDERY **(10 days)**

Competencies and Suggested Objectives:

1. Perform bindery operations.
   a. Perform a double fold and tri-fold on the folder.
   b. Determine the differences between NCR and standard padding.
   c. Produce pads of paper.
   d. Identify operational and safety procedures for using a mechanical or hydraulic paper cutter.
   e. Cut paper to size using a mechanical or hydraulic cutter.
   f. Set up and make a standard 3-ring binder hole punch.

   Related Academic Topics (See Appendix A):
   C4, C6
   M4, M5

   Workplace Skills (See Appendix B):
   WP5, WP6

Suggested Teaching Strategies:

1. *Perform bindery operations.*
   a. *Discuss and demonstrate procedures for perform a double fold and tri-fold on the folder. Have students practice these procedures.*
   b. *Discuss the differences between NCR and standard padding. Demonstrate the differences to the class.*
   c. *Discuss and demonstrate procedures for producing pads of paper. Have students practice these procedures.*
   d. *Identify and discuss operational and safety procedures for using a mechanical or hydraulic paper cutter. Demonstrate these procedures to the students.*
   e. *Discuss and demonstrate procedures for adjusting the cutter and cutting paper to size. Have students practice these procedures with a strong emphasis on safety.*
   f. *Discuss and demonstrate the procedures for setting-up and making a standard 3-ring binder hole punch. Have students practice these procedures.*

Suggested Assessment Strategies:

1. *Perform bindery operations.*
   a. *Student Exercise - Perform a double fold and tri-fold on the folder.*

b. *Student Exercise - Determine the differences between NCR and standard padding.*
c. *Student Exercise - Produce pads of paper.*
d. *Student Assignment - Identify operational and safety procedures for using a mechanical or hydraulic paper cutter.*
e. *Student Exercise - Cut paper to size using a mechanical or hydraulic cutter.*
f. *Student Exercise - Set up and make a standard 3-ring binder hole punch.*

Suggested References:

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Graphic Arts - The Press and Finishing Processes." Stillwater, OK: Mid-America Vocational Curriculum Consortium. 1991.

GRAPHICS AND PRINT COMMUNICATIONS II
UNIT 10: MACHINERY REPAIR AND ADJUSTMENT (5 days)

Competencies and Suggested Objectives:

1. Identify maintenance, repair, and other problem areas related to offset printing.
   a. Discuss procedures for changing blankets on an offset duplicator/press as related to type and size of paper to be run.
   b. Discuss adjustment of roller pressure.
   c. Discuss adjustment of plate to blanket pressure.
   d. Identify common problems related to offset duplicator/press including scumming, tinting, offset, emulsification, chalking, roller stripping, picking, and spraying; and describe possible remedies.
   e. Identify hickeys and describe their cause and remedy.

   Related Academic Topics (See Appendix A):
   C4, C6
   S6

   Workplace Skills (See Appendix B):
   WP5, WP6
2. Identify maintenance and repairs related to folders.
   a. Inspect rollers for glaze and build-up.
   b. Check parallel pressure rollers for correct pressure and alignment.

   Related Academic Topics (See Appendix A):
   C4, C6
   S6

   Workplace Skills (See Appendix B):
   WP5, WP6

Suggested Teaching Strategies:

1. *Identify maintenance, repair, and other problem areas related to offset printing.*
   a. Discuss and demonstrate procedures for changing blankets on an offset duplicator/press as related to type and size of paper to be run.
   b. Discuss and demonstrate the adjustment of roller pressure.
   c. Discuss and demonstrate adjustment of plate to blanket pressure.
   d. Identify and discuss the causes of common problems related to offset duplicator/press including scumming, tinting, offset, emulsification, chalking, roller stripping, picking, and spraying; and describe possible remedies. Provide examples of each type of problem for students and demonstrate how they can be corrected.
   e. Identify and discuss the causes of hickeys and describe their cause and remedy. Provide examples of this problem and demonstrate how it is corrected.

2. *Identify maintenance and repairs related to folders.*
   a. *Discuss and demonstrate the procedure for Inspecting rollers for glaze and build up.*
   b. *Discuss and demonstrate the procedure for checking parallel pressure rollers for correct pressure and alignment.*

Suggested Assessment Strategies:

1. *Identify maintenance, repair, and other problem areas related to offset printing.*
   a. *Test - Procedures for changing blankets on an offset duplicator/press.*
   b. *Test - Adjustment of roller pressure.*
   c. *Test - Adjustment of plate to blanket pressure.*
   d. *Student Assignment - Identify common problems related to offset duplicator/press operation.*
   e. *Student Assignment - Identify hickeys and describe their cause and remedy.*
2. *Identify maintenance and repairs related to folders.*
   a. *Student Exercise - Inspect rollers for glaze and build-up.*
   b. *Student Exercise - Check parallel pressure rollers for correct pressure and alignment.*

Suggested References:

"Graphic Communications." Glencoe/McGraw-Hill. 1995.

"Graphic Arts - The Press and Finishing Processes." Stillwater, OK: Mid-America Vocational Curriculum Consortium. 1991.

SECTION III:

RECOMMENDED TOOLS AND EQUIPMENT

RECOMMENDED TOOLS AND EQUIPMENT FOR SECONDARY GRAPHICS AND PRINT COMMUNICATIONS

1. 10 Power Glass Magnifier (1 per 3 students)
2. 30-60 Angle Drafting Triangle (1 per 3 students)
3. 45 Angle Drafting Triangle (1 per 3 students)
4. Burnisher (flat) (2 per program)
5. Burnishing Roller (2 per program)
6. Circle and Ellipse Templates (1 per 3 students)
7. Cleveland Folders (1 per program)
8. Collator (1 per program)
9. Contact Vacuum Frame & Light Source (1 per program)
10. Copy Holder (1 per computer)
11. Copy to Plate Platemaker (1 per program)
12. Densitometer (1 per program)
13. Developing Sink (1 per program)
14. Developing Trays (1 set per program)
15. Digital Scanner - Full Page Flat Bed (1 per program)
16. Drawing Board (1 per 2 students)
17. Drill Punch (1 per program)
18. Dry Toner Electrostatic Copier with Enlarging and Reducing Capacity (1 per program)
19. Film Dryer (Automatic) (1 per program)
20. Graduated Cylinder (1 per program)
21. Hand Tool Set (1 per program)
22. Jogger (1 per program)
23. Laser Printer (1 per 2 computers)
24. Light Integration Unit (1 per program)
25. Light Source (1 per program)
26. Light Table/Layout Table (2 per program)
27. Line Gauges (1 per 2 students)
28. Microcomputer with high resolution graphics monitor (4 per program)
29. Micrometer (1 per program)
30. Offset Duplicator/press (2 per program)
31. Opaque Brush (12 - various sizes)
32. PMT Processor (1 per program)
33. Padding Press (1 per program)
34. Paper Cutter - Hydraulic (1 per program)
35. Plastic Binding Machine (1 per program)
36. Plate Punch (1 per program)
37. Plate Sink (1 per program)
38. Platemaker (1 per program)
39. Process Camera (1 per program)
40. Proportion Scale (1 per program)

41. Round Cornering Machine (1 per program)
42. Screen Angle Indicator (1 per program)
43. Scribers (1 set of various sizes)
44. Sensitivity Guides (1 per program)
45. Single Head Stitcher (1 per program)
46. T-square - (2 per program)
47. Table Top Paper Folder (1 per program)
48. Technical Drawing Pens (2 sets per program)
49. Thermometer (Darkroom) (1 per program)
50. Timer (1 per program)
51. Truck with Roller (Paper Transport) (1 per program)
52. X-Acto Knife (4 per program)

APPENDIX A:

RELATED ACADEMIC TOPICS

APPENDIX A

RELATED ACADEMIC TOPICS FOR COMMUNICATIONS

C1 Interpret written material.
C2 Interpret visual materials (maps, charts, graphs, tables, etc.).
C3 Listen, comprehend, and take appropriate actions.
C4 Access, organize, and evaluate information.
C5 Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.
C6 Communicate ideas and information effectively using various oral and written forms for a variety of audiences and purposes.

EXPANDED TOPICS FOR COMMUNICATIONS

TOPIC C1: Interpret written material.

C1.01 Read and follow complex written directions.
C1.02 Recognize common words and meanings associated with a variety of occupations.
C1.03 Adjust reading strategy to purpose and type of reading.
C1.04 Use sections of books and reference sources to obtain information.
C1.05 Compare information from multiple sources and check validity.
C1.06 Interpret items and abbreviations used in multiple forms.
C1.07 Interpret short notes, memos, and letters.
C1.08 Comprehend technical words and concepts.
C1.09 Use various reading techniques depending on purpose for reading.
C1.10 Find, read, understand, and use information from printed matter or electronic sources.

TOPIC C2: Interpret visual materials (maps, charts, graphs, tables, etc.).

C2.01 Use visuals in written and in oral presentations.
C2.02 Recognize visual cues to meaning (layout, typography, etc.).
C2.03 Interpret and apply information using visual materials.

TOPIC C3: Listen, comprehend, and take appropriate action.

C3.01 Identify and evaluate orally-presented messages according to purpose.
C3.02 Recognize barriers to effective listening.
C3.03 Recognize how voice inflection changes meaning.
C3.04 Identify speaker signals requiring a response and respond accordingly.
C3.05 Listen attentively and take accurate notes.
C3.06 Use telephone to receive information.

C3.07 Analyze and distinguish information from formal and informal oral presentations.

TOPIC C4: Access, organize, and evaluate information.

C4.01 Distinguish fact from opinion.
C4.02 Use various print and non-print sources for specialized information.
C4.03 Interpret and distinguish between literal and figurative meaning.
C4.04 Interpret written or oral communication in relation to context and writer's point of view.
C4.05 Use relevant sources to gather information for written or oral communication.

TOPIC C5: Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.

C5.01 Select appropriate words for communication needs.
C5.02 Use reading, writing, listening, and speaking skills to solve problems.
C5.03 Compose inquiries and requests.
C5.04 Write persuasive letters and memos.
C5.05 Edit written reports, letters, memos, and short notes for clarity, correct grammar, and effective sentences.
C5.06 Write logical and understandable statements, phrases, or sentences for filling out forms, for correspondence or reports.
C5.07 Write directions or summaries of processes, mechanisms, events, or concepts.
C5.08 Select and use appropriate formats for presenting reports.
C5.09 Convey information to audiences in writing.
C5.10 Compose technical reports and correspondence that meet accepted standards for written communications.

TOPIC C6: Communicate ideas and information using oral and written forms for a variety of audiences and purposes.

C6.01 Give complex oral instructions.
C6.02 Describe a business or industrial process/mechanism.
C6.03 Participate effectively in group discussions and decision making.
C6.04 Produce effective oral messages utilizing different media.
C6.05 Explore ideas orally with partners.
C6.06 Participate in conversations by volunteering information when appropriate and asking relevant questions when appropriate.
C6.07 Restate or paraphrase a conversation to confirm one's own understanding.
C6.08 Gather and provide information utilizing different media.

C6.09 Prepare and deliver persuasive, descriptive, and demonstrative oral presentations.

RELATED ACADEMIC TOPICS FOR MATHEMATICS

M1 Relate number relationships, number systems, and number theory.
M2 Explore patterns and functions.
M3 Explore algebraic concepts and processes.
M4 Explore the concepts of measurement.
M5 Explore the geometry of one-, two-, and three-dimensions.
M6 Explore concepts of statistics and probability in real world situations.
M7 Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

EXPANDED TOPICS FOR MATHEMATICS

TOPIC M1: Relate number relationships, number systems, and number theory.

M1.01 Understand, represent, and use numbers in a variety of equivalent forms (integer, fraction, decimal, percent, exponential, and scientific notation) in real world and mathematical problem situations.
M1.02 Develop number sense for whole numbers, fractions, decimals, integers, and rational numbers.
M1.03 Understand and apply ratios, proportions, and percents in a wide variety of situations.
M1.04 Investigate relationships among fractions, decimals, and percents.
M1.05 Compute with whole numbers, fractions, decimals, integers, and rational numbers.
M1.06 Develop, analyze, and explain procedures for computation and techniques for estimations.
M1.07 Select and use an appropriate method for computing from among mental arithmetic, paper-and-pencil, calculator, and computer methods.
M1.08 Use computation, estimation, and proportions to solve problems.
M1.09 Use estimation to check the reasonableness of results.

TOPIC M2: Explore patterns and functions.

M2.01 Describe, extend, analyze, and create a wide variety of patterns.
M2.02 Describe and represent relationships with tables, graphs, and rules.
M2.03 Analyze functional relationships to explain how a change in one quantity results in a change in another.
M2.04 Use patterns and functions to represent and solve problems.
M2.05 Explore problems and describe results using graphical, numerical, physical, algebraic, and verbal mathematical models or representations.

M2.06 Use a mathematical idea to further their understanding of other mathematical ideas.
M2.07 Apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as art, music, and business.

TOPIC M3: Explore algebraic concepts and processes.

M3.01 Represent situations and explore the interrelationships of number patterns with tables, graphs, verbal rules, and equations.
M3.02 Analyze tables and graphs to identify properties and relationships and to interpret expressions and equations.
M3.03 Apply algebraic methods to solve a variety of real world and mathematical problems.

TOPIC M4: Explore the concepts of measurement.

M4.01 Estimate, make,and use measurements to describe and compare phenomena.
M4.02 Select appropriate units and tools to measure to the degree of accuracy required in a particular situation.
M4.03 Extend understanding of the concepts of perimeter, area, volume, angle measure, capacity, and weight and mass.
M4.04 Understand and apply reasoning processes, with special attention to spatial reasoning and reasoning with proportions and graphs.

TOPIC M5: Explore the geometry of one-, two-, and three-dimensions.

M5.01 Identify, describe, compare, and classify geometric figures.
M5.02 Visualize and represent geometric figures with special attention to developing spatial sense.
M5.03 Explore transformations of geometric figures.
M5.04 Understand and apply geometric properties and relationships.
M5.05 Classify figures in terms of congruence and similarity and apply these relationships.

TOPIC M6: Explore the concepts of statistics and probability in real world situations.

M6.01 Systematically collect, organize, and describe data.
M6.02 Construct, read, and interpret tables, charts, and graphs.
M6.03 Develop an appreciation for statistical methods as powerful means for decision making.
M6.04 Make predictions that are based on exponential or theoretical probabilities.

M6.05 Develop an appreciation for the pervasive use of probability in the real world.

TOPIC M7: Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

M7.01 Use computers and/or calculators to process information for all mathematical situations.
M7.02 Use problem-solving approaches to investigate and understand mathematical content.
M7.03 Formulate problems from situations within and outside mathematics.
M7.04 Generalize solutions and strategies to new problem situations.

RELATED ACADEMIC TOPICS FOR SCIENCE

S1 Explain the Anatomy and Physiology of the human body.
S2 Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.
S3 Relate the nine major phyla of the kingdom anomaly according to morphology, anatomy, and physiology.
S4 Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.
S5 Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.
S6 Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.
S7 Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance, population genetics, the structure and function of DNA, and current applications of DNA technology.
S8 Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

EXPANDED TOPICS FOR SCIENCE

TOPIC S1: Explain the Anatomy and Physiology of the human body.

S1.01 Recognize common terminology and meanings.
S1.02 Explore the relationship of the cell to more complex systems within the body.

S1.03 Summarize the functional anatomy of all the major body systems.
S1.04 Relate the physiology of the major body systems to its corresponding anatomy.
S1.05 Compare and contrast disease transmission and treatment within each organ system.
S1.06 Explore the usage of medical technology as related to human organs and organ systems.
S1.07 Explain the chemical composition of body tissue.

TOPIC S2: Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.

S2.01 Identify the major types and structures of plants, viruses, monera, algae protista, and fungi.
S2.02 Explain sexual and asexual reproduction.
S2.03 Describe the ecological importance of plants as related to the environment.
S2.04 Analyze the physical chemical and behavioral process of a plant.

TOPIC S3: Relate the nine major phyla of the kingdom anomaly according to morphology, anatomy, and physiology.

S3.01 Explain the morphology, anatomy, and physiology of animals.
S3.02 Describe the characteristics, behaviors, and habitats of selected animals.

TOPIC S4: Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.

S4.01 Examine minerals and their identification, products of the rock cycle, byproducts of weathering, and the effects of erosion.
S4.02 Relate the Hydrologic Cycle to include groundwater its zones, movement, and composition; surface water systems, deposits, and runoff.
S4.03 Consider the effects of weather and climate on the environment.
S4.04 Examine the composition of seawater; wave, tides, and currents; organisms, environment, and production of food; energy, food and mineral resources of the oceans.

TOPIC S5: Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.

S5.01 Examine the science of chemistry to include the nature of matter, symbols, formulas and nomenclature, and chemical equations.

S5.02 Identify chemical reactions including precipitation, acids-bases, and reduction-oxidation.
S5.03 Explore the fundamentals of chemical bonding and principles of equilibrium.
S5.04 Relate the behavior of gases.
S5.05 Investigate the structure, reactions, and uses of organic compounds; and investigate nuclear chemistry and radiochemistry.

TOPIC S6: Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.

S6.01 Examine fundamentals of motion of physical bodies and physical dynamics.
S6.02 Explore the concepts and relationships among work, power, and energy.
S6.03 Explore principles, characteristics, and properties of electricity, magnetism, light energy, thermal energy, and wave energy.
S6.04 Identify principles of modern physics related to nuclear physics.

TOPIC S7: Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance; population genetics, the structure and function of DNA, and current applications of DNA technology.

S7.01 Examine principles, techniques, and patterns of traits and inheritance in organisms.
S7.02 Apply the concept of population genetics to both microbial and multicellular organism.
S7.03 Identify the structure and function of DNA and the uses of DNA technology in science, industry, and society.

TOPIC S8: Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

S8.01 Apply the components of scientific processes and methods in classroom and laboratory investigations.
S8.02 Observe and practice safe procedures in the classroom and laboratory.
S8.03 Demonstrate proper use and care for scientific equipment.
S8.04 Investigate science careers, and advances in technology.
S8.05 Communicate results of scientific investigations in oral, written, and graphic form.

APPENDIX B:

WORKPLACE SKILLS

APPENDIX B
WORKPLACE SKILLS FOR THE 21ST CENTURY

WP1 Allocates resources (time, money, materials and facilities, and human resources).

WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.

WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.

WP4 Applies systems concept including basic understanding, monitoring and correction system performance, and designing and improving systems.

WP5 Selects, applies, and maintains/troubleshoots technology.

WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.

APPENDIX C:

STUDENT COMPETENCY PROFILE

STUDENT COMPETENCY PROFILE
FOR GRAPHICS AND PRINT COMMUNICATIONS I

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each unit. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the course.

In the blank before each competency, place the date on which the student mastered the competency.

Unit 1: Orientation

_____ 1. Review educational, occupational, and leadership opportunities in graphics and print communications.

Unit 2: Safety and Equipment Familiarization

_____ 1. Demonstrate general safety procedures used in graphics and print communications.
_____ 2. Demonstrate procedures for handling, storing, and disposing of hazardous materials.
_____ 3. Demonstrate familiarity with equipment in the graphics and print communications laboratory and hazards associated with that equipment.

Unit 3: Applied Math and Measurements for Graphics and Print Communications

_____ 1. Perform mathematical operations related to graphics and print communications applications.
_____ 2. Perform measurement practices as applied to graphics and print communications applications.

Unit 4: Job Planning and Layout

_____ 1. Perform basic layout procedures.

Unit 5: Introduction to Desktop Publishing

_____ 1. Perform basic computer skills associated with desktop publishing.
_____ 2. Perform basic word processing operations.
_____ 3. Perform desktop publishing operations.

Unit 6: Basic Photography and Darkroom Processes

_____ 1. Perform basic set-up and adjustments of a process camera.
_____ 2. Perform basic darkroom procedures.
_____ 3. Produce a process negative.

Unit 7: Stripping and Platemaking

_____ 1. Perform stripping operations.
_____ 2. Perform platemaking operations.

Unit 8: Fundamentals of Print and Duplication

_____ 1. Describe the role of copiers in printing and duplication.
_____ 2. Perform set-up of an offset duplicator/press.

Unit 9: Operation of Offset Duplicators/Presses

_____ 1. Prepare an offset duplicator/press for printing.
_____ 2. Operate an offset duplicator/press.

Unit 10: Bindery Operations

_____ 1. Perform bindery operations.

STUDENT COMPETENCY PROFILE
FOR GRAPHICS AND PRINT COMMUNICATIONS II

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each unit. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the course.

In the blank before each competency, place the date on which the student mastered the competency.

Unit 1: Orientation (Review and Reinforcement)

_____ 1. Review educational, occupational, and leadership opportunities in graphics and print communications.

Unit 2: Safety and Equipment Familiarization (Review and Reinforcement)

_____ 1. Demonstrate general safety procedures used in graphics and print communications.
_____ 2. Demonstrate procedures for handling, storing, and disposing of hazardous materials.
_____ 3. Demonstrate familiarity with equipment in the graphics and print communications laboratory and hazards associated with that equipment.

Unit 3: Employability Skills

_____ 1. Develop skills and resources necessary to gain employment.

Unit 4: Job Planning and Layout

_____ 1. Perform job planning and layout tasks.

Unit 5: Desktop Publishing

_____ 1. Perform desktop publishing operations.

Unit 6: Darkroom Techniques

_____ 1. Perform darkroom techniques.

Unit 7: Master and Platemaking

_____ 1. Perform metal platemaking operations.
_____ 2. Perform "black plate" platemaking.

Unit 8: Offset Duplicator/Press

_____ 1. Run offset duplicator/press jobs.
_____ 2. Perform daily maintenance of the offset duplicator/press.
_____ 3. Discuss color printing operations.

Unit 9: Bindery

_____ 1. Perform bindery operations.

Unit 10: Machinery Repair and Adjustment

_____ 1. Identify maintenance, repair, and other problem areas related to offset printing.
_____ 2. Identify maintenance and repairs related to folders.